

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. No. 09/231,791

**REMARKS**

The claims have been amended to resolve issues raised by the Examiner and to make editorial changes.

Entry of the above amendments is respectfully requested.

**Claim Objections**

On page 2 of the Office Action, the Examiner has objected to claims 1-10 because of various informalities.

In response to the Examiner's objections, Applicants have amended the claims to resolve the various issues. Accordingly, withdrawal of the objections is respectfully requested.

**Rejection under 35 U.S.C. § 112, Second Paragraph**

On page 3 of the Office Action, in paragraph 3, claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention for various reasons.

In response to this rejection, Applicants have amended the claims to resolve the various issues. Accordingly, withdrawal of this rejection is respectfully requested.

**Art Rejections**

On page 3 of the Office Action, in paragraph 5, claims 1, 4-6, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Farnham U.S. Patent No. 4,421,723. Further, on page 6 of the Office Action, in paragraph 8, claims 2, 3, 7 and 8 are rejected under 35 U.S.C. 103(a) as

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being unpatentable over Farnham U.S. Patent No. 4,421,723 as applied to claims 1, 4-6, 9 and 10 above.

Applicants respectfully submit that the present invention is neither anticipated by nor obvious over Farnham, and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

Initially, Applicants respectfully submit the reactor claimed in present claim 6 and the reactor obtained by the method of retrofitting according to present claim 1 substantially differ from the reactor disclosed in Farnham.

In this regard, Applicants respectfully submit that in the Office Action, the Examiner has erroneously compared the gas outlet perforated cylindrical wall of the catalyst bed according to the present invention (wall 8) with the pipe member 65 of Farnham.

Actually, the catalytic bed 12 of Farnham is delimited by a gas inlet perforated cylindrical wall indicated by screen means 22 (see also Office Action, page 5, lines 3) and a gas outlet perforated cylindrical wall indicated by screen member 74, which is part of the center pipe 64 (see Farnham, column 6, lines 9-10, 14-30, and 42-48).

Pipe member 65 of Farnham is merely a structurally independent perforated central duct arranged within the internal space defined by screen member 74 and in no way can be considered as a wall of the catalytic bed. Applicants note that a free space is defined between member 74 and member 65, all along their lengths (see Farnham, Figure 3 and column 6, lines 10-11).

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In other words, pipe member 65 of Farnham would correspond to a hypothetical central duct placed in the chamber 11 of the reactor according to the invention. It is clear that such a duct would not act as the catalyst bed outlet wall of present claims 1 and 6.

From the above, Applicants submit that it can be seen that the reasoning of the Examiner made with regard to the novelty of claims 1, 4-6, 9 and 10 is based on a wrong assumption, i.e., considering pipe member 65 equivalent to the gas outlet wall of the present invention.

It follows that according to Farnham no free-space exists between the gas outlet wall (member 74) and the unperforated cylindrical wall (sidewall 67). On the contrary, the latter is welded to the upper end of the gas outlet wall (see Farnham, Figure 3, column 6, lines 31-32).

Therefore, the characterizing features of claims 1 and 6 are nor disclosed nor suggested in Farnham, and thus Applicants submit that the subject matter of these claims should be considered patentable.

However, in order to remove any risk of confusion between the present invention and the reactor disclosed in Farnham, claims 1 and 6 have been amended to read: "..., for the passage of a part of the gas leaving said catalytic bed (6) through said portion of the gas outlet wall (8) facing said free-space (16);" based on the disclosure at page 5, lines 14-17, page 9, lines 26-27 and page 11, lines 21-24.

The added feature is clearly neither disclosed nor suggested in Farnham, wherein the openings 66 in the pipe member 65 are distributed in front of the screen member 74, only. In fact, no perforation is present in front of the free-space defined between the top end portion of member 65 and sidewall 67 (see Farnham, Figure 3).

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Therefore, the advantages resulting from this feature (see description, page 5, lines 17-18 and 24-28, page 9, lines 26-35) cannot be obtained with the reactor according to Farnham, and thus Applicants submit that the subject matter of claims 1 and 6 should be considered new and inventive with respect to the cited prior art.

As to the arguments set forth by the Examiner with regard to dependent claims 4-5 and 9-10, it should be noted that the unperforated wall 67 is neither supported by the pipe member 65 nor by the horizontal cap 71 (see Farnham, Figure 3). Thus, the Examiner's position in this regard is traversed as well.

Further, Applicants submit that the above arguments also apply to dependent claims 2, 3, 7 and 8.

Thus, Applicants submit that the present invention is neither anticipated by nor obvious over Farnham. Accordingly, withdrawal of these rejections is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

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Date: February 2, 2001

**APPENDIX**  
**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

**The claims are amended as follows:**

1. (Twice Amended) A method [Method] for in-situ [modernization of] modernization of a heterogeneous synthesis reactor, including an external shell comprising at least a catalytic bed (6) provided with a gas inlet perforated cylindrical wall (7) and a gas outlet perforated cylindrical wall (8), said method comprising the steps of:

providing an unperforated cylindrical wall (15) coaxial to said gas outlet wall (8) in said catalytic bed (6), said unperforated cylindrical wall (15) extending from an upper end (8a) of said gas outlet wall (8) for a portion of the same and for a predetermined length, so as to define a free-space (16) between the gas outlet wall (8) and the unperforated wall (15), for the passage of a part of the gas leaving said catalytic bed (6) through said portion of the gas outlet wall (8) facing said free-space (16);

providing means for closing an upper end of said free-space (16) between the unperforated wall (15) and the gas outlet wall (8), in proximity of the upper end (8a) of the wall [8] (8), preventing thereby a bypass of said catalytic bed or a recycling to the catalytic bed of the gas entering and leaving the reactor, respectively.

2. (Amended) [Method] The method according to claim 1, characterised in that said unperforated wall extends for a portion [comprised between 5% and 50%] corresponding to 5%-50% of the length of said gas outlet wall (8).

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3. (Amended) [Method] The method according to claim 1, characterised in that said free-space (16) has a thickness [comprised] between [0,5] 0.5 and 10 cm.

4. (Amended) [Method] The method according to claim 1, characterised in that said unperforated wall (15) is supported by said gas outlet wall (8).

5. (Twice Amended) [Method] The method according to claim 4, wherein said gas outlet wall (8) has a diameter smaller than the diameter of said gas inlet wall (7) and of said unperforated wall (15), characterised in that said unperforated wall (15) is supported by a gas-tight horizontal baffle (17) which protrudes above the upper end (8a) of said gas outlet wall (8), and rests on the same.

6. (Amended) [Heterogeneous] A heterogeneous synthesis reactor comprising:  
[-] an external shell (2);  
[-] at least a radial or axial-radial catalytic bed (6) [of the radial or axial-radial type], provided with [opposite] a gas inlet perforated cylindrical [walls] wall (7) and a gas outlet perforated cylindrical wall (8) [for the inlet and outlet (7, 8) of gases], extended in said shell (2); characterized in that it further comprises in said catalytic bed:  
[-] an unperforated cylindrical wall (15) coaxial to said gas outlet wall (8) in said catalytic bed (6), said unperforated cylindrical wall (15) extending from an upper end (8a) of said gas outlet wall (8) for a portion of the same [of a prefixed] and for a predetermined length, so as to define a free-space (16) between the gas outlet wall (8) and the unperforated wall (15), for the

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passage of a part of the gas leaving said catalytic bed (6) through said portion of the gas outlet wall (8) facing said free-space (16);

[-] means of closing said free-space (16) between the unperforated wall (15) and the gas outlet wall (8), in proximity of the upper end (8a) of the latter, preventing thereby a bypass of said catalytic bed or a recycling to the catalytic bed of the gas entering and leaving the reactor respectively.

7. (Amended) [Reactor] The reactor according to claim 6, characterised in that said unperforated wall (15) extends for a length [comprised between 5% and 50%] corresponding to 5%-50% of the length of said gas outlet wall (8).

8. (Amended) [Reactor] The reactor according to claim 6, characterised in that said free-space (16) is substantially annular and has a thickness [comprised] between [0,5] 0.5 and 10 cm.

9. (Amended) [Reactor] The reactor according to claim 6, characterised in that said unperforated wall (15) is supported by said gas outlet wall (8).

10. (Amended) [Reactor] The reactor according to claim 9, wherein said gas outlet wall (8) has a diameter smaller than the diameter of said gas inlet wall (7) and of said unperforated wall (15) [respectively], characterised in that said unperforated wall (15) is supported by a gas-tight horizontal baffle (17) which protrudes above the upper end (8a) of said gas outlet wall (8), and [leans] rests on the same.